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THE CORRELATION BETWEEN VOIDING SYMPTOMS, BLADDER DIARY AND OBJECTIVE FINDINGS ON URODYNAMIC FINDINGS AND MAXIMUM CYSTOMETRIC CAPACITY DURING HYDRODISTENTION IN FEMALES WITH INTERSTITIAL CYSTITIS/ PAINFUL BLADDER SYNDROME (IC/PBS)

Hypothesis / aims of study

Previous studies demonstrated a strong correlation between pain and cystoscopic findings, as an increase in pain with bladder filling was associated with inflammation, ulceration, and smaller bladder capacity. Other studies reported IC/PBS patients with Hunner's patch had lower bladder capacity, lower volumes at first desire to void, and more severe glomerulations. As shown in the above literature review, existing research has lacked the correlation between subjective symptoms and objective findings. Hence in order to help fill this gap, this study investigated the correlation between voiding symptoms and objective findings on bladder diary and urodynamic findings.

Study design, materials and methods

Fifty female patients who were compatible with the NIDDK criteria were included and all patients were not previously treated for IC/PBS before hydrodistention. These patients were assessed by validated questionnaire including O'Leary-Sant Symptom (ICSI) and Problem Index (ICPI) was used to objectify subjective symptoms. Pelvic Pain and Urgency/Frequency (PUF) questionnaire was also completed and functional bladder capacity was collected from three day bladder diary. We practiced the standardized consecutive filling cystometry and we recorded volume at first desire to void (FDV), normal desire to void (NDV), strong desire to void (SDV) and maximum cystometric capacity (MCC). All patients have undergone hydrodistention and cystoscopic maximal bladder capacity (MBC) at the intravesical pressure of 85 cm H2O was measured. These data were analyzed using Pearson correlations and we also use the partial correlation to exclude the influence of MBC on the correlation between symptom score, bladder diary and urodynamic findings.

Results

Patient demographics show the average age being 40.34 years (+/- 9.6). The mean daily urinary frequency was 14.08 times (+/- 7.2) and mean functional bladder capacity by bladder diary was 132.07 ml (+/- 167.02). The average ICSI, ICPI, and PUF questionnaire were 11.81 (+/- 3.5), 10.89 (+/- 2.8), and 19.02 (+/- 5.3) respectively and mean MBC was 647.50 (+/- 156.21). The PUF score had consistent negative correlations with the volume at FDV (P=0.02), NDV (P=0.02), and MCC (P=0.01) and the mean nocturnal frequency correlated negatively with MBC (P=0.05). The ICSI and ICPI showed no strong association with MBC and urodynamic findings. Daytime urinary frequency had a positive relationship with SDV (P=0.04). However, by using the partial correlation to exclude the influence of MBC, the PUF score had no significant correlations with the volume at FDV (P=0.08), NDV (P=0.08), and MCC (P=0.09) but ICPI showed positive correlation with MCC (P=0.03).

Interpretation of results

The mean functional bladder capacity (132.07+/-167.02 mL) was smaller than mean maximum cystometric capacity (247.48+/-106.26 mL). The functional bladder capacity had no correlation with urodynamic or cystoscopic findings. It seems that patients with IC/PBS were afraid of pain when bladder filling, so they went to toilet with lower voiding capacity. In our study, MBC had no correlation with subjective symptoms. The PUF score had negative correlations with the volume at FDV, NDV, and MCC by Pearson correlation but showed no strong correlation when using partial correlation to exclude MBC influence. In women with daytime frequency and nocturnal frequency showed correlation with bladder capacity but there was no significant correlation through partial correlation. Previous study showed in patients with untreated interstitial cystitis, a strong correlation between pain and cystoscopic findings was observed. Our study showed no significant correlation between pain score and MBC.

Concluding message

IC/PBS patients who suffered from severe symptoms seemed to have no strong correlation with MBC and MCC. However our data suggested that when using partial correlation to exclude MBC influence, ICPI positive correlation with MCC. The interaction between MBC and MCC may be considered.

Table 1 Characteristics of Questionnaire, bladder diary, cystoscopic maximal bladder capacity (MBC), and urodynamic findings

	N=50 Mean (±SD)
Questionnaire	
PUF	19.02 (±5.32)
ICSI	11.81 (±3.57)
ICPI	10.89 (±2.88)
Bladder diary	
Daytime frequency	14.08 (±7.22)
Nocturnal frequency	2.50 (±1.52)

Functional capacity	132.07 mL (±167.02)
Hydrodistention	
MBC	647.50 mL (±156.21)
Urodynamic findings	
FDV	94.44 mL (±50.38)
NDV	121.63 mL (±58.44)
SDV	188.86 mL (±96.93)
MCC	247.48 mL (±106.26)

Table 2 Pearson correlation

	MBC P value	FDV P value	NDV P value	SDV P value	MCC P value
PUF	0.30	0.02	0.02	0.09	0.01
ICSI	0.49	0.42	0.31	1.00	0.36
ICPI	0.86	0.12	0.14	0.86	0.25
Daytime frequency	0.80	0.91	0.85	0.03	0.38
Nocturnal frequency	0.05	0.51	0.58	0.56	0.89
Functional capacity	0.22	0.97	0.77	0.43	0.23

Table 3 Partial Pearson correlation

	MBC P value	FDV P value	NDV P value	SDV P value	MCC P value
PUF	n	0.08	0.09	0.33	0.08
ICSI	n	0.49	0.30	0.90	0.32
ICPI	n	0.06	0.06	0.28	0.03
Daytime frequency	n	0.85	0.98	0.19	0.10
Nocturnal frequency	n	0.77	0.79	0.70	0.90
Functional capacity	n	0.83	0.97	0.76	0.87

References

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Was the Declaration of Helsinki followed?	**Yes**
Was informed consent obtained from the patients?	**Yes**